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Diplom-Ingenieur Biotechnologie, Hochschule Darmstadt

Thesis Title:

In vitro cultivation of adult human chondrocytes: Importance of culture system, oxygen and zonal differences

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Cartilage has a limited ability to repair itself, and thus it frequently degenerates, necessitating surgical treatment. This project aimed to improve the conditions for growing human cartilage in the laboratory for transplant. In particular, Dr. Schrobback investigated the influence of oxygen concentration and cellular substrate on the formation of cartilaginous tissue by cells from different cartilage zones. He confirmed that low oxygen concentration enhanced cartilage-forming ability of cells, and that cells from different zones maintain their distinct characteristics outside the human body. Considering these zonal differences may be critical for the function of engineered cartilage tissue, and will help to ensure the clinical success of regenerative cartilage treatments.